C l a i m s

1. A method for producing a hydraulic binder containing calcium aluminate comprising:

heating a processed amorphous alumina-rich and/or alumina-hydroxide-rich residue after addition of a calcium ion-containing binder component and water.

2. The method as claimed in claim 1, wherein the processed amorphous alumina-rich and/or alumina-hydroxide-rich residue has a degree of crystallization of less than 25%, preferably of less than 20%, in particular of less than 15%.

3. The method as claimed in claim 1 or 2, wherein the processed amorphous alumina-rich and/or alumina-hydroxide-rich residue is formed in the form of a drinking water treatment residue.

4. The method as claimed in any one of the preceding claims, wherein the hydraulic binder containing calcium aluminate has a residual proportion of organic material, the residual proportion preferably being greater than 0.5 wt.%, particularly preferably greater than 1.5 wt.%, in particular greater than 3 wt.%, based on the total mass of the hydraulic binder.

5. The method as claimed in any one of the preceding claims, wherein the hydraulic binder containing calcium aluminate is anhydrous.

6. The method as claimed in any one of the preceding claims, wherein the hydraulic binder containing calcium aluminate has a particle size of less than 100 µm, preferably less than 50 µm, in particular less than 40 µm.

7. The method as claimed in any one of the preceding claims, wherein the hydraulic binder containing calcium aluminate is employed in the production of a constructing material, and is present in the constructing material in a proportion of 0.5 to 65 wt.%, preferably 1 to 55 wt.%, in particular 2 to 45 wt.%, based on the total dry mass.

8. The method as claimed in claim 7, wherein the addition of an ettringite former, preferably a calcium-containing and/or sulfate-containing ettringite former, is provided for the production of the constructing material.

9. The method as claimed in claim 7 or 8, wherein the addition of Portland cement and/or hydrated lime and/or calcium oxide and/or calcium sulphate is provided for the production of the constructing material.

10. The method as claimed in any one of the preceding claims, wherein the hydraulic binder containing calcium aluminate is formed in the form of a ternary binder, the ternary binder comprising, in addition to the calcium aluminate-containing component, Portland cement and a sulphate carrier.

11. The method as claimed in any one of the preceding claims, wherein the ternary binder has a proportion of 20 to 70 wt.% of the calcium aluminate-containing component, 10 to 40 wt.% of sulfate carrier and 0.2 to 20 wt.% of Portland cement, based on the total mass of the ternary binder.

12. The method as claimed in any one of the preceding claims, wherein the sulphate carrier -is formed in the form of alpha calcium sulphate hemihydrate, beta calcium sulphate hemihydrate, anhydrite, calcium sulphate dihydrate or mixtures thereof.

13. The method as claimed in any one of the preceding claims 7-9, wherein the addition of a filler is provided for the production of the constructing material, the filler preferably being added in a proportion of 10 to 90 wt.%, particularly preferably in a proportion of 20 to 80 wt.%, in particular in a proportion of 30 to 70 wt.%, based on the total dry mass of the constructing material.

14. The method as claimed in claim 13, wherein the filler is formed in the form of limestone powder, quartz sand, marble, chalk, clay, marl, talc or light fillers, such as hollow microspheres of glass, ceramic or plastic, or light fillers, such as expanded glass, expanded mica, expanded perlite, expanded slate, expanded clay, coal fly ash, brick chippings, natural pumice, tuff, lava, slag pumice, boiler sand or a mixture thereof.

15. The method as claimed in any one of the preceding claims 7-9 and 13, wherein the addition of additives is provided for the production of the constructing material, the additives preferably being added in a proportion of 0.001 to 10 wt.%, particularly preferably in a proportion of 0.005 to 5 wt.%, in particular in a proportion of 0.01 to 2.5 wt.%, based on the total dry mass of the constructing material.

16. The method as claimed in claim 15, wherein the additives are in the form of liquefiers, retarders, accelerators, actuators, stabilizers, defoamers or sealants.

17. The method as claimed in any one of the preceding claims 7-9, 13 and 15-16, wherein the addition of an epoxy resin and an epoxy hardener is provided for the production of the constructing material, wherein the epoxy resin and the epoxy hardener are preferably added in a total proportion of 10 to 60 wt.% relative to the total dry mass of the constructing material.

18. The method as claimed in any one of the preceding claims 7-9, 13, 15-16 and 17, wherein the addition of plastic dispersion powder is provided for the production of the constructing material, the plastic dispersion powder preferably being added in a proportion of 0.1 to 20 wt.%, particularly preferably in a proportion of 0.5 to 10 wt.%, -in particular in a proportion of 1 to 5 wt.%, based on the total dry mass of the constructing material.

19. The method as claimed in claim 18, wherein the synthetic material dispersion powder is formed on the basis of vinyl or acrylate polymers, in particular on the basis of a polyvinyl acetate, a polyvinyl versatate, a polystyrene acrylate, a polyacrylate, a polyvinyl alcohol, a polyvinyl propionate, a polyvinyl chloride, a polyethylene, a polypropylene, a butyl acrylate or a mixture thereof.

20. The method as claimed in any one of the preceding claims 7-9, 13, 15-16, 17-19, wherein the addition of a fibrous material is provided for the production of the constructing material, the fibrous material preferably being added in a proportion of 0.01 to 5 wt.%, particularly preferably in a proportion of 0.1 to 3 wt.%, in particular in a proportion of 1 to 2 wt.%, based on the total dry mass of the constructing material.

21. The method as claimed in claim 20, wherein the fibrous material has fibres of a length of up to 2 mm, preferably of up to 3 mm, in particular of up to 5 mm.

22. The method as claimed in any one of the preceding claims 7-9, 13, 15-16, 17-21, wherein the constructing material is formed in the form of a screed, mortar, filler or tile adhesive.